

Cherokee Heights Air Toxics Monitoring Project

Determining Community Impact of Air Toxics

Category: Community Scale Monitoring

Cherokee Nation

Air Toxics Monitoring Grant Application

Submitted to

EPA Region 6, Dallas, Texas

[Originally submitted as proposal to

**EPA Office of Air Quality Policy and Standards
(OAQPS)]**

For

Cherokee Nation Environmental Programs

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I. INTRODUCTION

A. Request for Funding

Cherokee Nation's Environmental Programs is requesting **\$165,000** in Federal funding under EPA Request for Applications (RFA) Solicitation # RFA NO: OAR-EMAD-05-16. The Clean Air Act Section 103 grant funding will be utilized for monitoring toxics in ambient air to determine the amounts and types of Volatile Organic Compounds (VOC) at the Cherokee Heights tribal community near Pryor in Mayes County, Oklahoma. Cherokee Nation will submit detailed data reports to the EPA. This data will be used to determine potential community health impacts from toxic air pollution sources and provide for community education and awareness of the pollutants present. The funding will also be used to provide public outreach and awareness by posting data either on the Cherokee Nation Information Exchange website or the EPA AQS database. The Project Period for this funding will be from June 1, 2006 through May 31, 2008.

B. Cherokee Nation Clean Air Program

Cherokee Nation is the lead agency for the Inter-Tribal Environmental Council (ITEC), a 40-tribe environmental consortium with member tribes in New Mexico, Texas and Oklahoma. Cherokee Nation/ITEC Clean Air Program staff operate and maintain ambient air monitoring equipment including: ozone (4-sites), NO_x (3-sites), NO_y (3-sites), CO (2-sites), SO₂ (3-sites), PM₁₀ (2-TEOMs, 1-BAM, and 2-FRMs), PM_{2.5} (6-FRM, and 1-TEOM FDMS), and 6-meteorological sites. Cherokee Nation/ITEC participates in several national and regional ambient air monitoring networks such as the CASTNet, IMPROVE, Mercury Deposition (MDN), and the CENRAP Regional Planning Organizations (RPO) Ammonia study. ITEC performs Quality Assurance (QA) audits, provides training, and provides technical assistance for tribes throughout EPA Region 6 that have their own air quality management programs. Currently, ITEC performs tribal quarterly equipment QA audits on PM_{2.5} samplers, criteria pollutant gaseous monitors and meteorological stations for tribes throughout Oklahoma and New Mexico. Required QA audits for ITEC equipment are performed by an outside engineering firm under contract. EPA Region 6 provides PEP audits and Technical System Review audits on ITEC monitoring activities. Additionally, EPA Region 6 annually checks ITEC operated ozone primary standards, and periodically tests each ozone analyzer in the network. All data gathered through ITEC ambient air activities are subjected to established verification procedures and are reported through the respective monitoring network, or through EPA's Air Quality System (AQS) database. All air quality work is done in accordance with EPA guidelines and EPA approved QMP's & QAPP's.

II. PROJECT BACKGROUND

A. Industrial Park Emissions

A 9000-acre industrial park is located in Mayes County, Oklahoma, which is 40 miles east from Tulsa and 30 miles north of Muskogee. It is advertised as the largest industrial park in Oklahoma, and as the nation's largest rural industrial park. The park is located at the intersection of two major highways. U.S. 69 is sometimes referred to in articles as part of the "NAFTA Transportation Corridor" and US 412 is sometimes referred to as part of the "Wal-Mart Expressway." Truck traffic is considerable along both highways. The park has its own airport, water supply and wastewater treatment facilities that possibly emit hazardous air pollutants (HAPS). The wastewater treatment facility includes lagoons with aeration. They advertise that over 70 firms now operate within the complex. Facilities include a coal-fired power plant, a new gas-fired power plant, chemical and plastic industries, paper product industries, and several other industries that emit hazardous air pollutants. New expansions to the industrial park are planned and they are actively recruiting additional industry to the area. Other significant air release point sources are located just outside the industrial park boundaries. All major point sources in Mayes County are spatially clustered near the industrial park, as are the tribal population centers of Pryor, Chouteau, Locust Grove, Salina, Sportsman Acres, and Cherokee Heights. Cherokee Heights is less than one mile from some sections of the industrial park (**Figure 1**).

B. Criteria Air Pollutant Facility Emissions

EPA's National Emission Inventory (NEI) Database (the most recent publicly available database for Criteria pollutants) indicates that Criteria point source emissions in Mayes County include:

- 1,379 Tons per Year (TPY) of Carbon Monoxide (CO)
 - Mayes County emits 1.9% of all Oklahoma facility CO emissions,
- 15,726 TPY of Nitrogen Oxides (NOx)
 - Mayes County emits 8% of all Oklahoma facility NOx emissions,
- 767 TPY of Volatile Organic Compounds (VOC)
 - Mayes County emits 2% of all Oklahoma facility VOC emissions
- 20,063 TPY of Sulfur Dioxide (SO2)
 - Mayes County emits 14.3% of all Oklahoma SO2 facility emissions
- 1,582 TPY of Course Particulate Matter (PM10),
 - Mayes County emits 10.7% of all Oklahoma facility PM10 emissions
- 1,301 TPY of Fine Particulate Matter (PM 2.5)
 - Mayes County emits 12.6% of all Oklahoma facility PM2.5 emissions

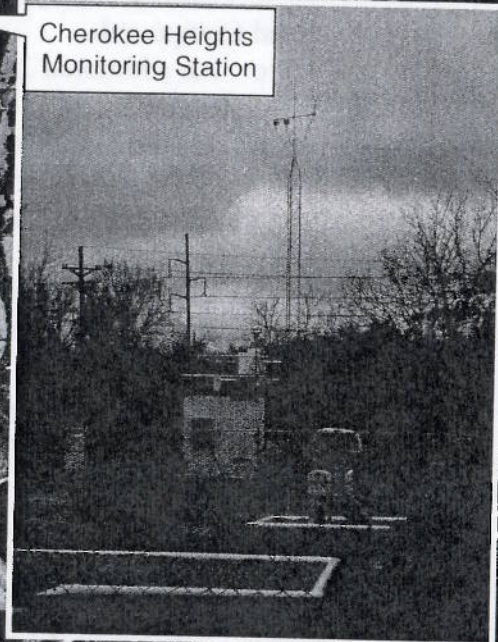
Cherokee Nation Community Air Toxics Study

Mid-America
Industrial Park

Cherokee Heights
Tribal Community

Cherokee Heights
Monitoring Station

Grand River



Mayes County

Cherokee Nation

N

0 0.5 1 2 Miles

C. Hazardous Air Pollutants (HAPs) Emissions

The 1996 HAPs NEI Database indicates major source emissions for HAPs in Mayes County at 4,392,093 pounds. Total HAPs for Mayes County are reported to be 5,235,528 pounds. Area sources are reported at 255,227 pounds; On-Road emissions are reported at 473,063 pounds; and, Non-Road emissions are reported at 115,146 pounds. Population has significantly increased in Mayes County since 1996. Traffic along Highways 69 and 412 has also increased. The 2001 Toxic Release Inventory (TRI) indicates a total of 205,143.6 pounds of HAP's released in Mayes County. Most of these are clustered in and near the Cherokee Heights community. Some information about specific HAPs of concern follows:

- Lead (not including lead compounds)
 - The 19th largest facility source for air releases of lead in the United States is in Mayes County (3,698 pounds)
- Lead Compounds
 - An additional 2,088 pounds of lead compounds are air released in Mayes County
- Naphthalene
 - Mayes county has both the 8th largest and the 25th largest facilities for air releases of Naphthalene in the United States (53,796 pounds combined –According to EPA's IRIS, Naphthalene has a Reference Concentration of .003mg/m³)
- Dicyclopentadiene
 - The 19th largest facility source for air releases of Dicyclopentadiene in the United States is in Mayes County (1,866 pounds)
- Formaldehyde
 - A new power plant has established a Potential to Emit (PTE) of over 22,000 pounds per year of Formaldehyde in its permit application
- Hydrochloric Acid
 - The coal-fired power plant at MidAmerica reported 3,682,790 pounds of hydrochloric acid air released in 1996. The 2001 TRI shows 63,000 pounds. Comparing models to measured concentrations would be useful to determine whether or not the reported results are actually achieved.

D. Public Complaints

After the startup of the new Chouteau gas-fired power plant, Cherokee Nation citizens living at Cherokee Heights contacted the Cherokee Nation government complaining of “green” clouds passing through the community about twice a month. Community members could not identify the specific source causing the green clouds along with the very unusual odor. Cherokee Nation staff have noticed green plumes from the new gas-fired power plant's stacks, but have not witnessed a visible green cloud in the housing community. The community is expressing increasing concerns about the air quality and the potential impact on health.

E. Health Data

According to the 1999 National Cancer Institute Database, Mayes County has the second highest death rate (Males) for respiratory types of cancer in Oklahoma, and rates that are 32% greater than the US average. The most recent data indicates a slight rate increase for Mayes County and is reported at a rate 40% higher than the US average. This includes lung, trachea, bronchus, & pleura cancer mortality rates. *Mayes County Health Status Indicators*, Oklahoma State Department of Health, reported that Mayes County fetal death rates are over double the state average for the period examined.

F. Current Ambient Air Monitoring (Tribal/State)

Oklahoma Department of Environmental Quality staff indicated that the State of Oklahoma has not conducted any toxics monitoring anywhere in the state. The State also indicated that no such monitoring is planned for the area of concern. Consequently, no historical tribal-state-federal data are available to determine actual concentrations of HAPs in ambient air in Oklahoma.

Cherokee Nation has established an ambient air monitoring site in Mayes County. The site is located on Tribal Trust land at the Cherokee Heights housing complex. This site is approximately 3.8 miles from the coal-fired power plant, 1.5 miles from the new gas-fired power plant, and 0.75 miles from the sewage lagoon for the industrial park (**Figure 1**). Instrumentation at the current Cherokee Heights site includes: R&P TEOM for continuous PM10 measurement (Federal Equivalent Method), R&P TEOM with FDMS for continuous PM2.5 measurement (the FDMS includes reference flow to account for volatile loss), R&P 2025 Sequential Sampler for PM2.5 (Federal Reference Method), API gaseous monitors including NOx, NOy, Ozone, and SO2, as well as MetOne wind speed, wind direction, ambient temperature, and relative humidity meteorological instrumentation. The proposed VOC sampling equipment would be collocated with the Cherokee Heights monitoring station.

The Cherokee Nation conducted a VOC screening project at the Cherokee Heights monitoring station during the winter of 2005 (December 23, 2004 to March 29, 2005). Fifteen samples were collected in vacuum canisters and analyzed via GC/MS in accordance with EPA Test Method TO-15. The sampling interval was 1-in-6 days and each sample was a 24-hour composite. The results of the screening project were as follows: (1) 24 of 59 VOCs were detected in one or more samples; (2) 15 of the 24 detected VOCs were hazardous air pollutants (HAPs); (3) only 5 detected VOCs (HAPs) exceeded an EPA health-based benchmark in one or more samples, **but 4 of these 5 VOCs are respiratory carcinogens (benzene, MTBE, methylene chloride, TCE)**. Thus the data for this short-term screening project revealed a potential problem with VOC air toxics in the Cherokee Heights area. Much more data will be needed for an assessment of the cumulative risks posed by VOCs and other pollutants to residents of Cherokee Heights. ***Additional sampling for VOCs at the Cherokee Nation's Cherokee Heights monitoring station is warranted. Funding of this grant application will permit the Cherokee Nation to conduct such monitoring.***

III. TOXIC AIR MONITORING OBJECTIVES, TASKS, METHODS, PLANNED OUTPUTS, AND EXPECTED BENEFITS

Objectives

The Cherokee Nation's major objectives for this project are as follows:

- (1) Collect VOC toxics data at Cherokee Heights monitoring station for 18 months so that seasonal variations in VOC concentrations can be documented.
- (2) Focus on hazardous air pollutants (VOC HAPs) identified as "drivers" in 1999 NATA, as well as on VOC HAPs detected in Cherokee Nation's screening project in winter of 2005.
- (3) Analyze data, identifying VOCs of concern, determining which VOCs exceed EPA human health benchmarks, and identifying sources of VOCs, if possible.
- (4) Process data so it can be used in a future human health risk assessment.
- (5) Share data with EPA, state of Oklahoma (ODEQ), Cherokee Nation, and general public via AQS, XML flat file, and other means, as appropriate.
- (6) Share data with residents of Cherokee Heights via public meeting.

Tasks

Cherokee Nation Clean Air Program staff will collect VOC samples every sixth day for eighteen (18) months in specially treated canisters for a 24-hour sample period utilizing a commercially available canister sampling system, and deliver the exposed canister to an appropriate laboratory for analysis. The Cherokee Nation currently has one VOC sampling system in place at Pryor and will modify it so duplicate samples can be collected. Not less than 10% of the sample events will be duplicate samples and up to 10% of the samples will be field blank samples for QA/QC. Consideration will be given to including split samples and/or blind samples supplied by the EPA in the sampling regimen in order to enhance the useability of the sample data in a future human health risk assessment.

The laboratory will analyze samples for a suite of VOCs, including VOC HAPs identified as "drivers" in the 1999 NATA and VOC HAPs detected in Cherokee Nation's screening project in the winter of 2005 (see **Table 1**). The "drivers" include benzene, carbon tetrachloride, chloroform, 1,3-butadiene, 1,2-dichloropropane, methylene chloride, tetrachloroethylene, trichloroethylene, vinyl chloride, and formaldehyde. Of the 24 VOCs detected in the Cherokee Nation's winter, 2005 screening project, particular emphasis will be given to those 5 VOCs (benzene, MTBE, methylene chloride, TCE, and m,p-xylene) that exceeded an EPA human health benchmark.

TABLE 1 (Page 1 of 4)
VOCs OF CONCERN AND THEIR MDLs FOR THIS PROJECT

Volatile Organic Compound (VOC) (Synonym in parentheses) BOLDFACE CAPS indicate analyte detected in one or more samples of CNEP's VOC screening project	CAS Number	Method Detection Limit (MDL) Required	
		ppbv	µg/m³
Bromodichloromethane		0.016	0.11
Bromoform (Tribromomethane)	75-25-2	0.020	0.212
Dibromochloromethane		0.009	0.08
DICHLORODIFLUOROMETHANE	75-71-8	0.013	0.063
Trichlorofluoromethane	75-69-4	0.023	0.128
Acetylene	74-86-2	0.044	0.047
Acetonitrile (Methyl cyanide, Cyanomethane)	75-05-8	0.028	0.047
Vinyl Chloride	75-01-4	0.040	0.103
Acrylonitrile (Vinyl cyanide, Cyanoethylene)	107-13-1	0.007	0.015
CHLOROMETHANE (Methyl Chloride)	74-87-3	0.063	0.131
PROPYLENE (Propene, Methyl Ethylene)	115-07-7	0.039	0.066
Bromomethane (Methyl bromide)	74-83-9	0.048	0.187
Dichlorotetrafluoroethane	76-14-2	0.014	0.101
Chloroethane (Ethyl chloride)	75-00-3	0.029	0.077
1,3-Butadiene	106-99-0	0.015	0.033
1,1-Dichloroethane	75-34-3	0.020	0.083
Trichlorotrifluoroethane	76-13-1	0.029	0.223
t-1,2-Dichloroethylene (1,2-Dichloroethene)	540-59-0	0.038	0.152
METHYL ISOBUTYL KETONE (Hexone)	108-10-1	0.052	0.212
1,2-Dichloropropane (Propylene dichloride)	78-87-5	0.011	0.05

TABLE 1 (Page 2 of 4)
VOCs OF CONCERN AND THEIR MDLs FOR THIS PROJECT

Volatile Organic Compound (VOC) (Synonym in parentheses) BOLDFACE CAPS indicate analyte detected in one or more samples of CNEP's VOC screening project	CAS Number	Method Detection Limit (MDL) Required	
		ppbv	µg/m³
m,p-XYLENE (1,3-Dimethylbenzene, 1,4-Dimethylbenzene)	108-38-3 106-42-3	0.031	0.133
o-XYLENE (1,2-Dimethylbenzene)	95-47-6	0.026	0.111
Xylenes, mixed	1330-20-7		
1,1,2-Trichloroethane (Vinyl trichloride)	79-00-5	0.011	0.06
1,2-Dibromoethane (Ethylene dibromide)	106-93-4	0.0002	0.0017
Chlorobenzene (Phenyl chloride, Benzene chloride)	108-90-7	0.019	0.089
Hexachloro-1,3-Butadiene	87-68-3	0.004	0.045
c-1,3-Dichloropropene	542-75-6	0.025	0.114
t-1,3-Dichloropropene	542-75-6	0.039	0.176
Styrene (Vinyl benzene)	100-42-5	0.026	0.109
1,1,2,2-Tetrachloroethane	79-34-5	0.002	0.017
1,3,5-TRIMETHYLBENZENE (Mesitylene)	108-67-8	0.029	0.144
1,2,4-TRIMETHYLBENZENE (Pseudocumene)	95-63-6	0.057	0.280
o-Dichlorobenzene (1,2-Dichlorobenzene)	95-50-1	0.063	0.380
m-Dichlorobenzene (1,3-Dichlorobenzene)		0.041	0.248
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	0.047	0.28
1,2,4-Trichlorobenzene	120-82-1	0.138	1.026
Acrolein (Acrylic Aldehyde, 2-Propenal)	107-02-8	0.0087	0.02
Chloroprene (Chlorobutadiene, 2-Chloro-1,3-Butadiene)	126-99-8	0.032	0.117
Bromochloromethane	74-97-5	0.019	0.102

TABLE 1 (Page 3 of 4)
VOCs OF CONCERN AND THEIR MDLs FOR THIS PROJECT

Volatile Organic Compound (VOC) (Synonym in parentheses) BOLDFACE CAPS indicate analyte detected in one or more samples of CNEP's VOC screening project	CAS Number	Method Detection Limit (MDL) Required	
		ppbv	µg/m³
METHYLENE CHLORIDE (Dichloromethane)	75-09-2	0.041	0.144
Ethyl tert-butyl ether (ETBE)	637-92-3	0.038	0.158
TOLUENE (Methylbenzene)	108-88-3	0.024	0.091
BENZENE	71-43-2	0.021	0.067
Chloroform (Trichloromethane)	67-66-3	0.017	0.084
Carbon tetrachloride (Tetrachloromethane)	56-23-5	0.011	0.067
Tetrachloroethylene (Tetrachloroethene)	127-18-4	0.025	0.17
TRICHLOROETHYLENE (Trichloroethene, TCE)	79-01-6	0.003	0.017
tert-Amyl Methyl Ether (TAME)	994-05-8	0.052	0.219
ETHYLBENZENE (Phenylethylene)	100-41-4	0.021	0.091
METHYL-t-BUTYL-ETHER (MTBE)	1634-04-4	0.058	0.210
Ethyl acrylate	140-88-5	0.017	0.07
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	0.020	0.112
Methyl methacrylate	80-62-6	0.041	0.168
1,2-Dichloroethane (Ethylene dichloride)	107-06-2	0.018	0.074
c-1,2-Dichloroethylene (1,2-Dichloroethene)	540-59-0	0.024	0.096
n-Octane	111-65-9	0.028	0.131
1,1-Dichloroethene (1,1-Dichloroethylene; Vinylidene chloride)	75-35-4	0.037	0.146
METHYL ETHYL KETONE (MEK, 2-Butanone)	78-93-3	0.031	0.090
Chloromethylbenzene (o-Chlorotoluene)	95-49-8	0.032	0.164

TABLE 1 (Page 4 of 4)
VOCs OF CONCERN AND THEIR MDLs FOR THIS PROJECT

Volatile Organic Compound (VOC) (Synonym in parentheses) BOLDFACE CAPS indicate analyte detected in one or more samples of CNEP's VOC screening project	CAS Number	Method Detection Limit (MDL) Required	
		ppbv	µg/m³
CYCLOHEXANE	110-82-7	0.12	0.41
CARBON DISULFIDE	75-15-0	0.13	0.40
1,4-Dioxane	123-91-1	0.169	0.61
2-HEXANONE (Methyl n-butyl ketone)	591-78-6	0.36	1.47
HEPTANE	142-82-5	0.13	0.53
HEXANE	110-54-3	0.16	0.56
Tetrahydrofuran	109-99-9	0.21	0.62
VINYL ACETATE (Ethenylethanoate)	108-05-4	0.18	0.63
Ethyl acetate (Ethyl ethanoate)	141-78-6	0.2	0.72
ISOPROPYL ALCOHOL (2-Propanol, Isopropanol)	67-63-0	1.46	3.59
ACETONE (2-Propanone)	67-64-1	0.17	0.40
4-ETHYLTOLUENE (p-ethyltoluene)	622-96-8	0.27	1.33

The Cherokee Nation will analyze the lab data, identifying VOCs detected in project samples, checking the lab's detection limits for those VOCs, and comparing the data to EPA human health benchmarks and ODEQ MAACs. Seasonal trends in VOC concentrations will be identified. Data will be compared to EPA's TRI inventory, Oklahoma's TRI inventory, and to wind rose diagrams provided by the Oklahoma Climatological Survey in an attempt to identify industrial sources of detected VOCs. Concentrations of BTEX compounds (benzene, toluene, ethylbenzene, xylene) and MTBE will be examined to see if such concentrations are correlated. Positive correlation of BTEX and MTBE would indicate mobile (vehicular) sources for those compounds. VOC data will be compared to data for other pollutants (ozone, NO_x, NO_y, SO₂, continuous PM₁₀, continuous PM_{2.5}, and FRM PM_{2.5}) monitored by Cherokee Nation at its Cherokee Heights station to determine if the concentrations of such constituents are correlated. VOC concentration data will be converted from ppbv to µg/m³ for use in a future human health risk assessment. VOC data will be converted to XML flat files and entered into the AQS database.

The Cherokee Nation will host a public meeting to present the results of this project to the residents of Cherokee Heights and to advise those residents of any health risks they might be exposed to from VOCs and other monitored pollutants in ambient air.

Cherokee Nation has already submitted a *Quality Assurance Project Plan and Work Plan for the [CNEP] Air Toxics Monitoring Project* to EPA Region 6 for approval. EPA approval of this QAPP is expected by the time funding is awarded for this project. All work performed by the Cherokee Nation during this project will be conducted in accordance with this EPA-approved QAPP. The laboratory will analyze samples in accordance with its own QAPP. The lab will meet any detection limits required by the Cherokee Nation for this project. Detection limits must be as low, or lower than, any applicable EPA human health benchmarks for the VOCs of concern.

Methods

Cherokee Nation will use the methodology in Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), the Technical Assistance Document for NAATS, and an EPA approved QAPP for sample collection and analysis. The lab analyzing the samples will also adhere to this method. The Cherokee Nation will follow standard reporting requirements for listing project data in AQS.

Planned Outputs

Approximately 100 VOC samples will be collected at the Cherokee Heights community. Sampling data collected will be used to assess health risks to community members living in Cherokee Heights. The funding will also be used to provide public outreach and awareness by posting data either on the Cherokee Nation Information Exchange website via XML formatted AQS data or the EPA AQS database. Cherokee Nation will also present the sampling activities and data gathered from the project at the EPA Data Analysis Workshop or the EPA Region 6 Monitoring Strategy Meeting. Cherokee Nation will also present the findings of the project to the Cherokee Heights community at a public meeting to be held at the end of the project period.

In summary, the work products to be developed from this project are as follows:

- (1) VOC toxics data for the Cherokee Heights/Pryor Industrial Park area, with this data being posted to AQS, and with this data being useable for future human health risk assessment.
- (2) Public outreach, informing the residents of Cherokee Heights of any health risks to which they are exposed from VOCs and other pollutants in ambient air.

Expected Benefits

Project benefits to the public are expected to include the following:

(1) VOC toxics data for the Cherokee Heights/Pryor Industrial Park area will be shared with the EPA, Oklahoma Department of Environmental Quality, the Cherokee Nation, and the general public. As no such data currently exist, aside from the Cherokee Nation's screening project data, the data acquired in this project will fill an important data gap for an area of Oklahoma with concentrated industrial activity.

(2) Project data can be used by the Cherokee Nation for a future human health risk assessment.

(3) Project data can be used by the EPA, the state of Oklahoma, and the Cherokee Nation in identifying and evaluating emissions sources, in evaluating permit applications and permit renewals, and for regulatory enforcement.

(4) Residents of Cherokee Heights, as well as the general public, will benefit from information that can be used to improve public health by reducing the incidence of respiratory diseases.

Project outcomes transferable to other similar scenarios and locations are expected to include:

(1) The project can be used as a model for other tribes and tribal communities in their own VOC monitoring.

(2) The Cherokee Nation will increase its technical skills and capacities in air quality monitoring and will be able to share this knowledge and expertise with other tribes. For example, the Cherokee Nation could share its QAPP, SOPs, and data analysis tables and protocols for this project with other tribes contemplating similar projects.

IV. PROJECT TIMELINE, EVALUATING PROJECT SUCCESS, AND LEVERAGING OTHER RESOURCES

Project Timeline

(1) Cherokee Nation will receive EPA approval of its QAPP for this project by June 1, 2006, or by the end of the second month of the project.

(2) Cherokee Nation will solicit bids from labs for sample analysis during the first month of the project and will select the winning bid and award the contract by the beginning of the third month of the project.

(3) Cherokee Nation will begin sample collection by the beginning of the third month of the project, or by the date of project QAPP approval by EPA, whichever is later.

(4) Cherokee Nation will begin data analysis as soon as the first data is received from lab. Data analysis will continue to the end of the project on May 31, 2008.

(5) Cherokee Nation will complete sample collection by the end of the 20th month of the project, or by the end of 18 months of sampling, whichever is later.

(6) Cherokee Nation will complete final posting of project data to AQS within 90 days after the conclusion of the project on May 31, 2008. Posting of project data to AQS may begin as early as the 9th month of the project.

(7) Cherokee Nation will host public meeting to present results of project to residents of Cherokee Heights no later than the final month of the project (May, 2008).

(8) Cherokee Nation will submit final project report to EPA within 90 days after the conclusion of the project on May 31, 2008. Quarterly technical reports will be submitted to EPA within 30 days after the end of each three-month quarter of each fiscal year.

The Cherokee Nation will monitor progress on this project by means of regular staff meetings, in-house sample tracking, coordination with the lab, and internal QA procedures, as specified in the project QAPP and in the Cherokee Nation's QMP for its ITEC environmental programs. The EPA's project officer for this project will monitor progress via quarterly technical reports received from the Cherokee Nation and via other communication, as necessary.

Evaluating Project Success

This project will be considered successful if the six objectives listed at the beginning of Section III above are met.

Leveraging Other Resources

The primary participants in this project are the Cherokee Nation and the lab contracted to analyze the project samples. Secondary participants may include a Cherokee Nation health clinic and a Cherokee Nation epidemiologist. These secondary participants may assist with data interpretation, evaluating data from a human health perspective. The secondary participants may also assist with the hosting of a public meeting, helping Cherokee Nation Clean Air Program staff with the presentation and interpretation of project results to the residents of Cherokee Heights. The Oklahoma Climatological Survey may provide the Cherokee Nation with wind rose diagrams for project sample dates.

V. BIOGRAPHIES/QUALIFICATIONS OF CHEROKEE NATION STAFF

Ryan Callison, Environmental Specialist III

Ryan has an Associates Degree in Biology from Connors State College, Bachelors Degree in Environmental Management and Masters Degree in Industrial Management from Northeastern State University. He is a Certified Hazardous Materials Manager (CHMM), Registered Sanitarian (RS), and Registered Professional Environmental Specialist (RPES). Ryan began working with the Cherokee Nation Clean Air Program as an Environmental Analyst in December 1996. Ryan is the manager of the Cherokee Nation and ITEC Clean Air Grant. This grant enables one of the largest tribal air monitoring networks in the United States. This grant has assisted the Cherokee Nation and other Indian tribes in EPA R6 with air monitoring evaluations on tribal land. Clean Air projects include ambient air monitoring for the criteria pollutants,

PM2.5/10, Mercury Deposition Network, IMPROVE, CASTNet, air toxics, and special purpose monitoring. Ryan is also an ESRI ArcView GIS Authorized Instructor and a Trimble Navigation Certified GPS Trainer and provides Geographic Information System (GIS) training and support services to both the Cherokee Nation Environmental Programs and ITEC member tribes. Ryan is a Cherokee Nation tribal member.

Jack Butler, Environmental Specialist II

Jack holds a Bachelor of Science degree in Environmental Management from Northeastern State University. Jack joined the CNEP/ITEC staff in November 1997 and is a member of ITEC's Clean Air team. Jack's work involves site setup, installation, calibration, service and repair for 6 criteria pollutant air monitoring sites. Jack also participates in the following air related sites: IMPROVE (national/regional haze program), CASTNet (national and deposition), MDN (mercury deposition network) and PM2.5 (fine particulate matter) network.

Kent Curtis, Environmental Specialist II

Kent Curtis is a Certified Hazardous Materials Manager (CHMM) and is a member of the National Ground Water Association. He has a Bachelor of Science degree in Environmental Biology and Geology from the University of Tulsa, and a Master of Arts degree in Paleontology from the University of California at Berkeley. Kent worked with the CNEP/ITEC Superfund program from 1991 to 2005 and was manager of the Superfund program from 1996 to 2002. He began working with the CNEP/ITEC air quality monitoring projects in 2004. He is responsible for Quality Assurance and Quality Control (QA/QC) of the air quality monitoring projects and of the CNEP/ITEC Superfund and Brownfields programs. He is also responsible for health and safety aspects of those projects and programs. He developed the CNEP/ITEC Superfund Quality Assurance Project Plan (QAPP) and the CNEP/ITEC Superfund General Health and Safety Plan (GHSP), and he is responsible for health, safety, and technical training of the CNEP staff. He is also providing such training to environmental staffs of the ITEC tribes. He was involved in the planning and implementation of two Remedial Investigation/Feasibility Study (RI/FS) projects on lands of the Quapaw Tribe and supervised extensive soil sample collection and sample data analysis for one of those projects. He is currently responsible for data analysis and QA/QC for the VOC/air toxics monitoring project at Pryor.

April Hathcoat, Environmental Specialist I

April holds a Bachelor of Science degree in Biology from Northeastern State University. She joined CNEP/ITEC in February 2004 and works in the Clean Air Program. She previously worked at Wiltel Communications as a technical analyst responsible for capacity management of their network. Her current duties include quality control and quality assurance of all air monitoring data, and she is responsible for uploading data into the EPA's Air Quality System (AQS). She is also developing a system to code air toxics data for AQS upload. She is a member of the Oklahoma Society of Environmental Professionals and is licensed with the State of Oklahoma as a Registered Sanitarian and a Registered Environmental Specialist.

Jacque Adam, Environmental Specialist I

Jacque obtained a Bachelor of Science degree in Environmental Management from Northeastern State University in August 2005. She joined the Cherokee Nation Clean Air Program in June, 2005. Jacque is involved with the monitoring of particulate matter, mercury deposition, and ammonia, as well as with passive ozone monitoring (POM). Her work includes the collection, handling, and shipping of air samples, routine QA/QC checks of monitoring instruments, and maintenance of instruments and equipment.

Position Vacant, Environmental Specialist I

The CNEP is currently hiring another Environmental Specialist I who will be primarily responsible for instrument and equipment maintenance and repair. This person will also be responsible for routine sample collection and QA/QC checks of instruments and equipment.

VI. DETAILED PROJECT BUDGET

Project Assistant, Environmental Specialist I
The project assistant is a Bachelor of Science degree in Environmental Management from Northern
State University in August 2002. This person is the Chief of the Clean Water Air Program in June
2002. The project assistant is involved with the monitoring of particulate matter, mercury deposition, and
mercury in water as well as with particulate matter monitoring (PM₁₀). The work includes the collection,
handling, and shipping of air samples using QA/QC checks of monitoring instruments and
maintenance of instruments and equipment.

Position 7, Environmental Specialist I

The EMP is currently being hired as an Environmental Specialist I who will be primarily
responsible for instrument and equipment maintenance and repair. This person will also be
responsible for some sample collection and QA/QC checks of instruments and equipment.

Cherokee Nation Community Air Toxics Monitoring Budget
Project Period 6-1-06 thru 5-31-08

OES PERSONNEL:

\$31,769

Regional Program Director:	\$26.83	at	80	hours
Regional Program Manager:	\$23.82	at	80	hours
Environmental Specialist III:	\$22.98	at	300	hours
Environmental Specialist II:	\$19.71	at	200	hours
Environmental Specialist II:	\$25.33	at	300	hours
Environmental Specialist I:	\$13.77	at	200	hours
Environmental Technician:	\$10.53	at	200	hours
Budget Analyst II:	\$14.52	at	200	hours
Administrative Assistant:	\$13.80	at	110	hours

FRINGE: @ 34.87%

\$11,078

TRAVEL:

\$9,011

Per Diem - hotel & per diem	\$132.00	per day				
EPA National Air Quality Meeting						
EPA Air Quality System (AQS) Conference	2	staff x	1	trip(s) x	3	day(s) \$792
EPA R6 visits (Includes Monitoring Strategy Mtg)	2	staff x	1	trip(s) x	5	day(s) \$1,320
Technical training(s) (EPA, ITEP, APTI, etc)	3	staff x	3	trip(s) x	1	day(s) \$1,188
	1	staff x	1	trip(s) x	3	day(s) \$396
Commercial Air Travel :	\$345.00	per flight				
EPA R6 visits (Includes Monitoring Strategy Mtg)						
EPA National Air Quality Meeting	3	staff x	3	trip(s)		\$3,105
Technical training(s) (ITEP, APTI, etc)	2	staff x	1	trip(s)		\$690
	1	staff x	1	trip(s)		\$345
EPA Air Quality System (AQS) Conference						
	2	staff x	1	trip(s)		\$690
Oklahoma Turnpike Pass fees (Toll Roads)						\$200
Misc. Taxi Cab Fares						
Rental car	\$20.00	cab fare x	3	trip(s)		\$60
	\$75.00	rental fee x	3	trip(s)		\$225

EQUIPMENT:

\$6,995

(Equipment over \$5K not subject to IDC)

Environmental Systems Model 910A* AVOCs Toxics Sampler *Meets NATTS requirements	\$6,995
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CONTRACTUAL:

\$77,000

(Contractual not subject to IDC)

Volatile Organic Compound (VOC) Toxic Analysis (EPA TO-15)	\$77,000
200 samples @ \$385	
Sampling schedule follows EPA's National 1 in 6 day sampling schedule (5 samples per month X 18 months X 2 units) + 20 Field Blanks	

SUPPLIES:	\$3,400
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Office supplies, PPE, printer cartridges, paper, copies, etc.	\$1,500
Laboratory Instrumentation Rack	\$900
Stainless tubing, fittings, and supplies	\$1,000

OTHER:	\$13,600
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Shelter (site utilities) \$50 per month x 1 shelters x 18 months	
1 shelters @ 50 per month	\$900
Shelter, Instrument, & Operational Insurance	\$1,000
Shelter heat & air maintenance & repair	\$200
Office & cellular telephones	\$500
Office copy machine	\$300
Office shipping (instruments & summa canisters)	\$4,500
Office computers, business software, & printers	\$4,400
Community Outreach - Clean Air & Air Toxics Promotional & Awareness Materials	\$1,800

PERSONNEL:	\$ 31,769
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FRINGE:	\$ 11,078
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TRAVEL:	\$ 9,011
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EQUIPMENT: (NO IDC)	\$ 6,995
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CONTRACTUAL: (NO IDC)	\$ 77,000
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SUPPLIES:	\$ 3,400
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OTHER:	\$ 13,600
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CATEGORY TOTALS SUBJECT TO IDC	\$ 68,858
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DIRECT FEDERAL (NOT SUBJECT TO IDC ITEMS)	\$ 83,995
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DIRECT FEDERAL	\$ 152,853
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INDIRECT = DIRECT X IDC RATE	\$12,147
IDC Rate = 17.64%	

APPLICANT: NO MATCH	\$0.00
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AWARD TOTAL:	\$165,000
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